



Embassy
of the Federal Republic of Germany
Tokyo



日独交流160周年
Jahre Freundschaft
Deutschland – Japan



BDI
The Voice of
German Industry

Symposium together with:

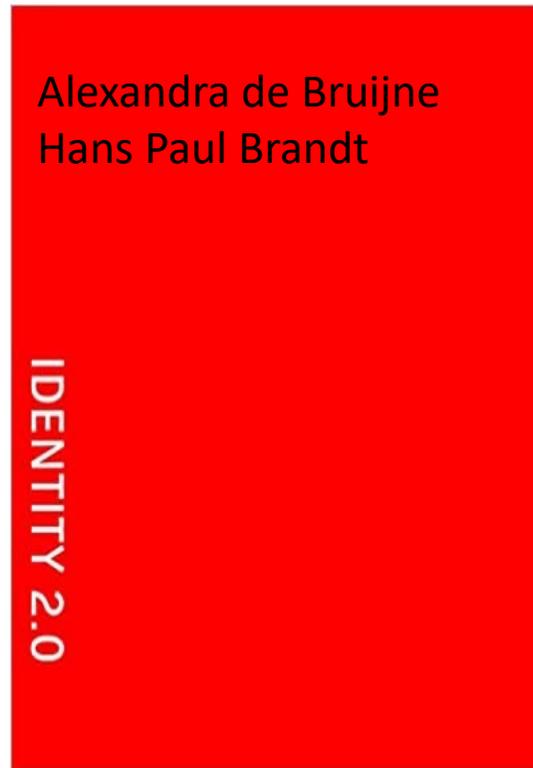


BDI – International Innovation Talks
Society 5.0 and current Japanese R&I policies

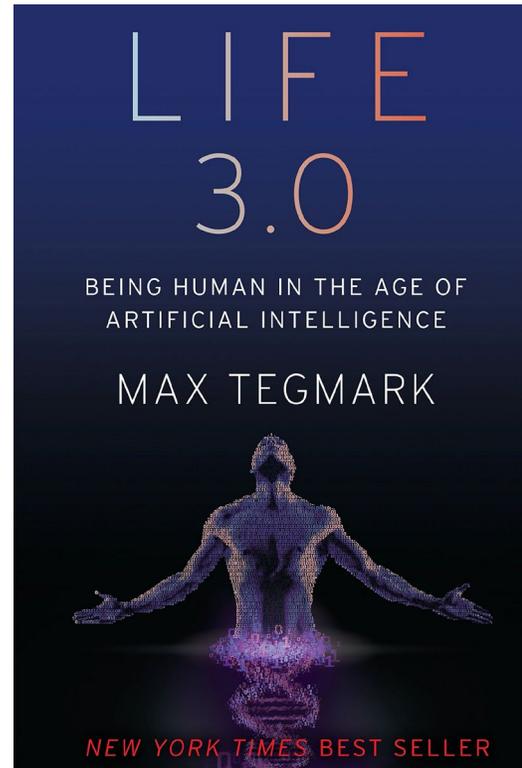
The Vision of a „Society 5.0“ in a German-Japanese Context

Dr. Martin Pohl
Counsellor – German Embassy Tokyo
martin.pohl@diplo.de

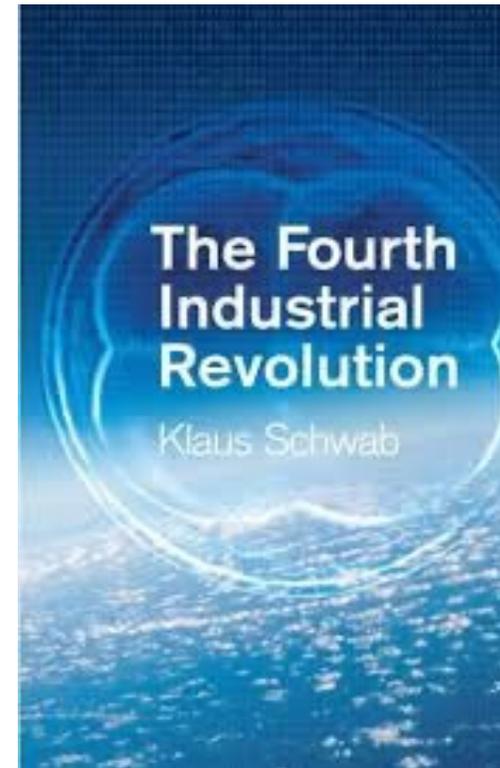
From “2.0” to “5.0”: Many Contributions towards a Changing World.



Netherlands



USA



Germany



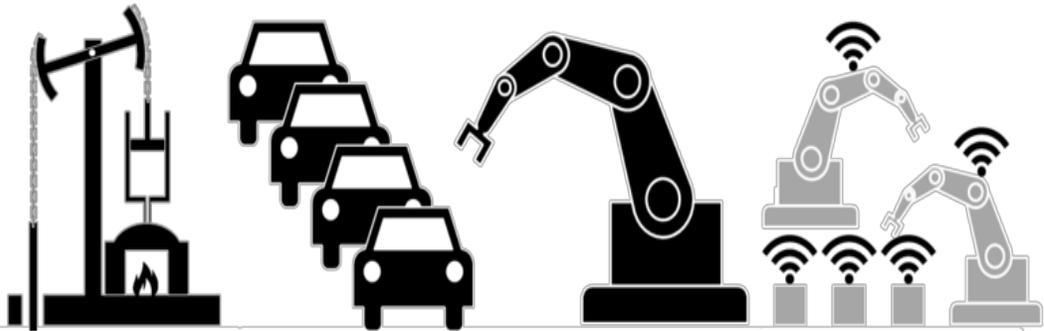
Japan

All four books discuss the relations between human and society, innovation and production – though with different thought and from different perspectives.

Note: A **vision** is using the **present thought**. The **future** as such, something not existing in human thought yet, is **not predictable**. The answer remains to philosophy or religion.

Basic Outline of “Industry 4.0” (Connected Industries) and “Society 5.0”

Related to Technology



1st

2nd

3rd

4th

Mechanization,
water power, steam
power

Mass production,
assembly line,
electricity

Computer and
automation

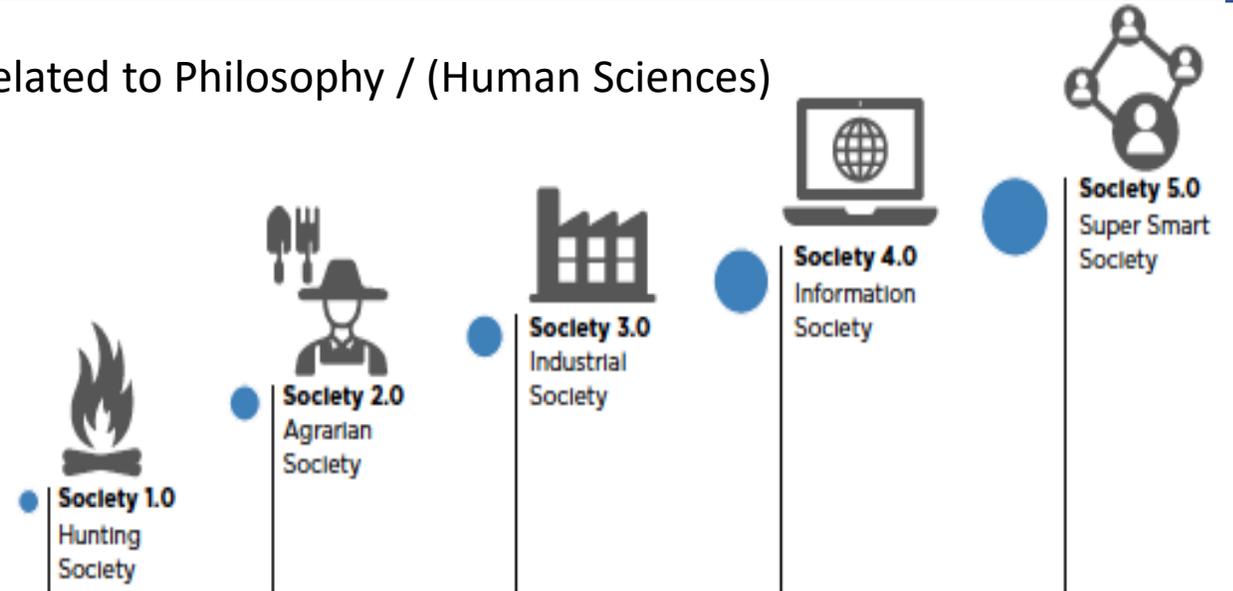
Cyber Physical
Systems

The thought is related to **Industrial History** or **Industrial Revolution based on stages of technological innovation.**

Question: consciousness and human ideas result through technology in (better) *material conditions*?!

Of course, society will be effected by technical progress.

Related to Philosophy / (Human Sciences)



The thought is related to the Age of Enlightenment: **history is a “historical progress in stages”**. This asserted that the development of human society has progressed through a series of stages.

Question: consciousness and human ideas about the universe result from *material conditions* (rather than vice versa) close to historical materialism?!

Model focuses on society in its core: Discovering the unknown – being built by all people using as guiding principle: “happiness of people comes first”.

Natural Science as Basis for Industry 4.0

Diffusion of Development:

- **Metcalf's Law:** states that the value of a telecommunication network is proportional to the square of the number of connected users of the system (n^2).

or:

- **Zipf's Law:** states that the frequency of any word is inversely proportional to its rank in the frequency table. Thus the most frequent word will occur approximately twice as often as the second most frequent word, three times as often as the third most frequent word, etc. The same relationship occurs in many other rankings unrelated to language, such as the population ranks of cities in various countries, corporation sizes etc.

Speed of Development:

- **Moore's Law:** is the observation that, over the history of computing hardware, the number of transistors in a dense integrated circuit doubled approximately *every two years*. There will be companies which can keep up with this speed – others will be too slow.
maybe soon
- **Gambetta's Law:** *Doubling* quantum volume every year is ongoing, and if this continues, quantum advantage should be reached in the 2020s.”

Philosophy as Basis for Society 5.0 – “Happiness of People Comes First”



Tatsuo MIYAJIMA 宮島 達男, Artist *1957

I want to create change, but in relation to the three concepts: **Keep Changing, Connect with Everything, Continue Forever**. It is not about creating a beautiful image or system, it is more about **creating an inner spiritual quality in the world**. My idea of the future is not a pictorial image but a spiritual concept.

Example: Zero is a western concept. ... There is no physical zero. In Buddhist philosophy we have the word *Ku* which means emptiness, which is very different from zero. The word *Ku* is realistic emptiness, physical emptiness. (Zero is) not square, not circular, not big, not small etc.. ... *Ku* contains the cycle of life and death.

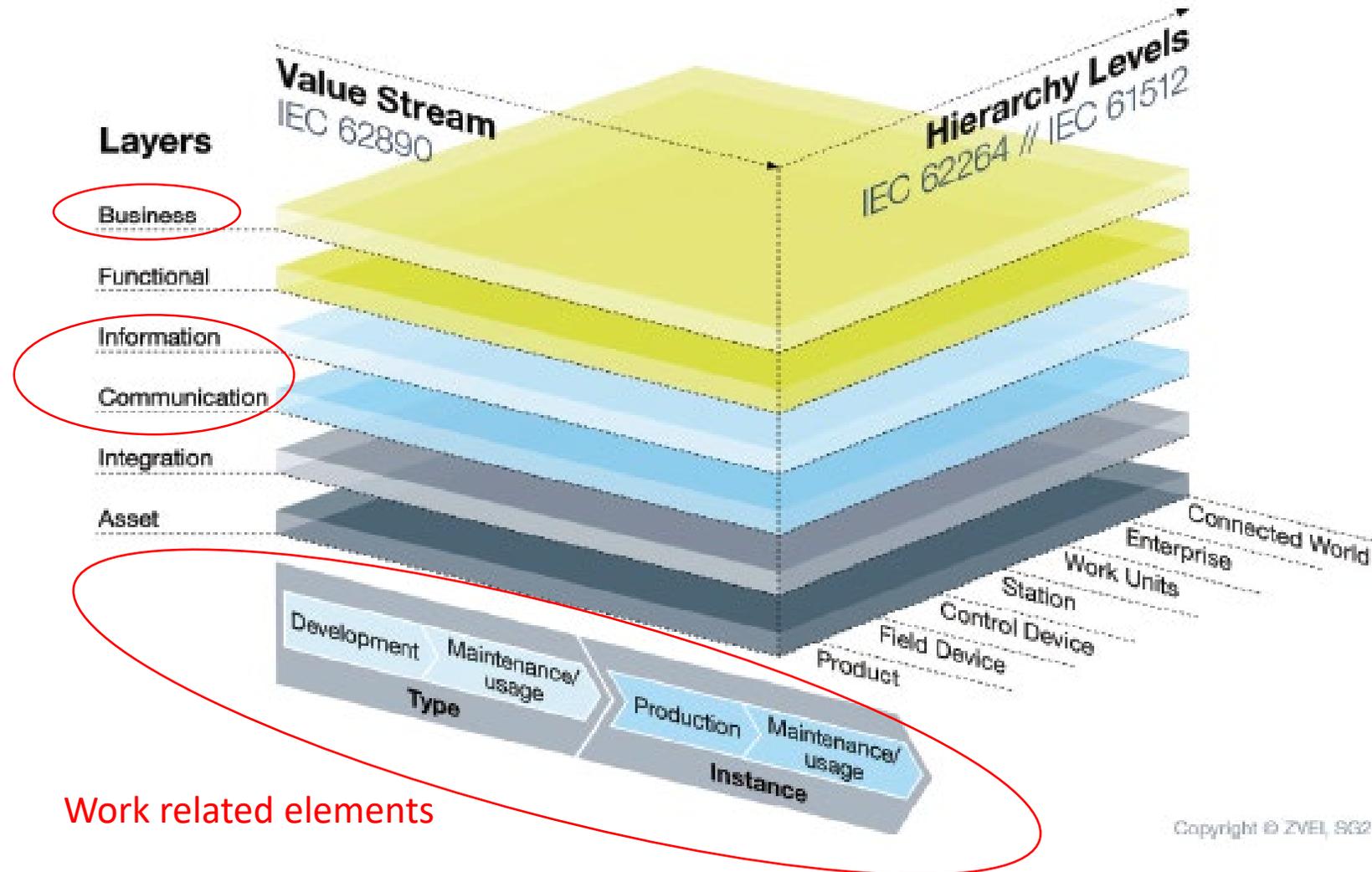
The **new sensorium of Japanese art** is to be understood as a collection of means with the help of which we can **actively deal with the transitionally emerging close connection of our *virtual* and our *actual* life**.



Industry 4.0 and Society 5.0 from a Management Point of View Here: Labor - Work

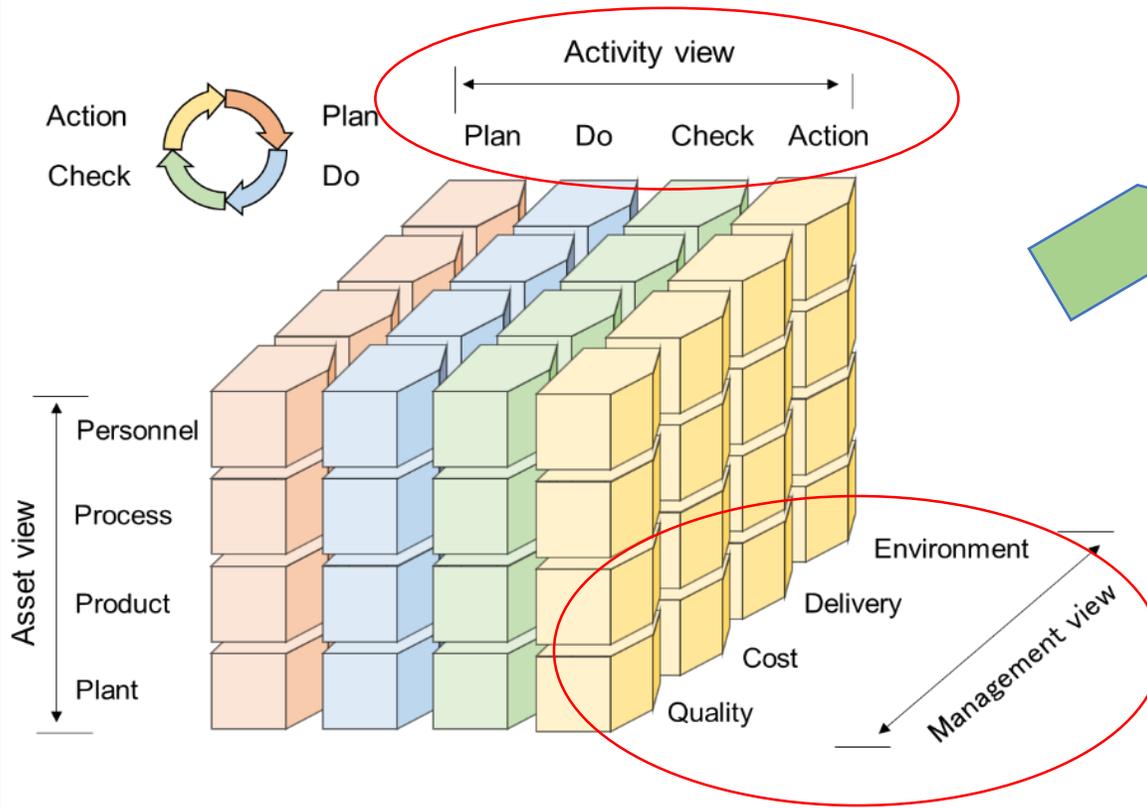
- The core of Industry 4.0 is about how to get the job done while Society 5.0 is emphasizing on how to optimize the man-hour responsibility to get the job done.
- Differing from Industry 4.0, which features effectiveness of using automated machines, Society 5.0 focuses on the effectiveness of optimizing knowledge workers assisted by intelligent machines.
- Industry 4.0 is about computerized communications by all means: Society 5.0 is meant for the harmonization of work with the help of intelligent machines for the benefit of the workers.

Reference Architecture based on German Thought

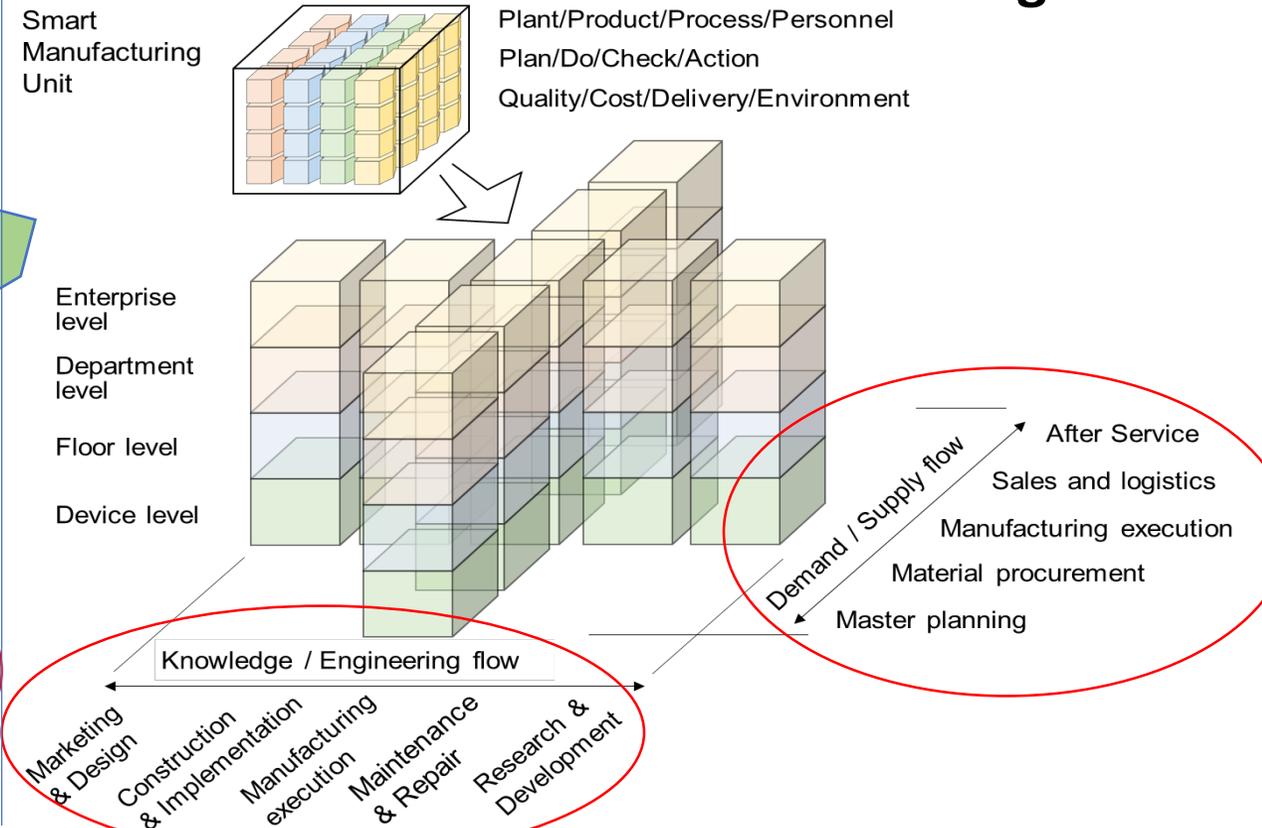


Reference Architecture based on Japanese Thought

Smart Manufacturing Unit



General Functions for Manufacturing



Work related elements



First Result for German-Japanese Co-operation: Focusing on the Challenges of the Operative Level

- Both Industry 4.0 and Society 5.0 are linked to innovation, causing interaction between the way how humans produce (work) and society as a whole.
- The overall targets, the expected final achievements of Japanese science policy and German science policy, Japanese business and German business are quite **in line with each other**. As a result, on high level discussion, a common understanding can be achieved quickly.
- The **challenge** is on the operative level: as discussed before, **the thought how to approach the targets, the way how to work, are very different, sometimes opposite from each other**. Regrettably, these topics are usually excluded in Japanese-German discussions, even though a successful co-operation can be achieved only on this operative level.

The Position of UNESCO Towards Society 5.0 Overlooks the Chances ...

According UNESCO:

- The grand and somewhat nebulous concept of Society 5.0 has gradually become a centerpiece of the Abe Cabinet's growth strategy – which means that science, technology and innovation (STI) policy has now become a mainstream political agenda.
- Behind the growing zeal for Society 5.0, there appears to be an ardent wish on the part of the Japanese government and business community to seize this golden opportunity to reverse lingering adverse trends ... ever-intensifying global competition, the changing structure of value creation in the new digital economy, depopulation and ageing, and growing fiscal pressure from rising government expenditure on social security.

Second Result for German-Japanese Co-operation: “Happiness of People Comes First” as a Management Task

Human do not only share a knowledge about something, but also about themselves. Who “we” are, however, is not defined by data about who we are, such as name, age, gender, etc., but occurs in social processes of recognition or disregard, with many possibilities in between. **Who we are, then, is not identical to our objectified and digitized personal data.** The German-Uruguayan Philosopher Rafael CAPURRO calls the difference in data context between “‘who’ and ‘what’ we are” **“ethical difference”**.

For **“Happiness of People Comes First”**:

Working out the core “ethical difference” in both countries, Japan and Germany, could bring a general direction for decisions. However, also for each innovation this is a true and an always ongoing **management task**: in business, politics and science.